

REMARKS/ARGUMENTS

Claims 1-33 are resubmitted. Claims 1, 9, 15, 23, 24, and 28 are currently amended. No claims are being canceled. No new claims have been added.

Claims 24, 26-28, and 31-33 have been rejected under 35 USC 102(b) as being anticipated by French Patent 2,579,130 ("Tisne"). Claims 1-33 have been rejected under 35 USC 103(a) as being unpatentable over Tisne in view of U.S. Patent 3,003,188 ("Weiss"). Claims 1-33 have been provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of copending Application No. 10/646,316.

Double-Patenting

Claims 1-33 have been provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of co-pending Application No. 10/646,316. The co-pending application 10/646,316 is owned by the same entity as the present patent application, i.e., both patent applications are commonly owned and both have the same filing date. Applicants are filing a terminal disclaimer concurrently herewith in compliance with 37 C.F.R. 1.321(c), in order to overcome this rejection.

Tisne

Claims 24, 26-28, and 31-33 have been rejected under 35 USC 102(b) as being anticipated by Tisne. Claims 24 and 28 (and also claim 23) have been amended, support for which can be found in the specification as originally filed, for example, at paragraphs [023], [025] - [026], [035], and [037] - [039] and

Figure 4.

Applicants agree with the Office action that Tisne "failed to teach the specific manner in which one rotated the mandrel" and "was silent as to the means to rotate the mandrel". Applicants further respectfully submit that Tisne provides no teaching whatsoever related to the problems associated with lay-up of composite materials to an extremely large mandrel - such as that for a commercial aircraft having a diameter in excess of 20 feet and length in excess of 30 feet - as those encountered by the present invention and requiring stiffeners for support of the mandrel surface and rigid attachment of the mandrel to other supporting structures (e.g., circular rings or other rotational means) as claimed (as amended) by the present invention.

In addition, Tisne teaches a creel (reference 8, Fig. 7) that is supported at the delivery head (22, 40) on an arm mechanism (41, 44, 47) attached to a connecting mechanism (50) in such a way that the creel moves and follows the motion of the delivery head (see Fig. 7, Fig. 8). Thus, the inertia of the creel, its size and weight are factors which may be limiting to the motion of the delivery head and its access to the mandrel surface. By way of contrast, the present invention provides a novel location for the creel 233 as being supported on connecting mechanism 232, which also supports arm mechanism 234 (see Fig. 4; see also paragraph [035] and Fig. 3). Thus, creel 233 (as claimed by amended claims 23, 24, and 28) is not supported on the arm mechanism and thus does not affect the motion or access to the mandrel surface of the material delivery head 228. Thus, the novel location of the creel addresses the problems of large structures not addressed by Tisne such as allowing the creel to be large enough to store greater amounts of prepreg materials for supplying to fiber placement material delivery head 228 and providing a location for control electronics and mechanisms for controlling connecting mechanism 232, arm mechanism 234, and material delivery head 228, as claimed by amended

claim 23.

Therefore, Applicants submit that the 35 USC 102(b) rejections to claims 24, 26-28, and 31-33 (as amended) should be withdrawn.

Tisne in view of Weiss

Claims 1-33 have been rejected under 35 USC 103(a) as being unpatentable over Tisne in view of Weiss. Claims 1, 9, 15, 23-24, and 28 have been amended, support for which can be found in the specification as originally filed, for example, at paragraphs [023], [025] - [026], [035], and [037] - [039] and Figure 4.

Applicants submit that, while Weiss may disclose certain features – such as a ring – superficially similar to those disclosed by the present invention, Weiss, like Tisne, does not provide teachings related to the problems associated with lay-up of composite materials to an extremely large mandrel - such as that for a commercial aircraft having a diameter in excess of 20 feet and length in excess of 30 feet - as those encountered by the present invention and, in fact, Weiss teaches away from the present invention as claimed by the amended claims.

Weiss teaches fabrication using liquid resins poured into a mold (col. 1, lines 55-60) of size significantly smaller than the composite lay-up mandrels for large commercial aircraft of the present invention, Weiss's example of a large structure being that of a truck body (col. 1, lines 27-37 and throughout the disclosure). Weiss's molds have separate sides, top, and bottom walls (col. 2, lines 45-50 and Fig. 14). In operation (col. 5, line 25 et seq. through col. 7, line 33), Weiss teaches adjusting the mold walls relative to each other, rotating the mold so that each separate side to be poured is horizontal facing up, pouring

resin and allowing it to harden sufficiently not to flow, further adjusting positions of the mold walls, rotating, etc., adjusting the positions of the mold walls to release the product, and rolling the product out of the mold on dolly 48. In order to adjust the mold walls and use dolly 48, the mold is adjustably secured to rings 30 surrounding the mold 20 using a system of hydraulic jacks 36 and 40 and rails 44 on which dolly 48 rides (col. 2, line 63 through col. 3, line 17).

The present invention as claimed by claims 1, 9, 15, 23, 24, and 28 (as amended) uses stiffeners for support of the mandrel surface and rigid attachment of the mandrel to other supporting structures (e.g., circular rings or other rotational means) contrary to the principles of operation of Weiss. For example, stiffeners of the present invention, needed to support the large structural loads generated by the large mandrel size to maintain accuracy of the OML (outside mold line) surface to the aircraft specifications, are contrary to use for small truck body molds where such stiffeners are not needed (and would be merely a waste of extra material) and it is seen that Weiss provides no teaching regarding mold stiffeners or rigidly attaching the mold to Weiss's rings with or without the aid of stiffeners.

In addition, the stiffeners as claimed, by directly attaching the circular rings to the tool and providing additional rigidity of attachment of the mandrel to the circular rings, are contrary to the principles of operation of Weiss in that they would prevent the operation of the elaborate jack and dolly system of Weiss. Along these lines, dolly 48 (col. 3, lines 13-14; Fig. 7, see also Fig. 1) is not a bearing cradle (which, in the present invention, bearing cradle 218 supports the rings 212 and thereby the entire tool 202 including the mandrel 206) but part of the system for moving and adjusting mold 20 relative to rings 30 and has no analog nor counterpart in the present invention and, in fact, further teaches away from the present invention as claimed, for example, in claims 2, 11, 15, and 23.

Furthermore, the need for maintaining OML accuracy of the mandrel to aircraft shape specifications requires a permanent mandrel rather than an adjustable mold, so the stiffeners as claimed, which enhance the fixedness of shape of the OML surface of the mandrel tool, are contrary to the principles of operation of Weiss's mold supported adjustably in relation to Weiss's rings. Therefore, there are numerous aspects by which Weiss teaches away from the present invention and Applicants respectfully submit that the rejections based on Weiss should be withdrawn.

Additionally, while Weiss appears to show a gantry arm, Weiss provides no teaching regarding either a creel or location of such on a connecting mechanism rather than on an arm mechanism, as claimed by the present invention. In view of the argument made above with regard to Tisne, Applicants submit that neither Tisne nor Weiss teach to the problems related to fabrication of large structures in regard to either of the present invention's claimed teachings with regard to stiffeners or creel location and submit that Weiss, therefore, also does not make obvious the present invention, whether alone or in combination with Tisne.

CONCLUSION

Applicants would like to thank the Examiner for the interview of January 23, 2006. Reconsideration and withdrawal of the Office Action with respect to claims 1-33 is requested. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

In the event the examiner wishes to discuss any aspect of this response, please contact the attorney at the telephone number identified below.

Respectfully submitted,

By: /David Bowls/
David Bowls, Reg. No. 39,915
Michael A. Shimokaji, Reg. No. 32,303

SHIMOKAJI & ASSOCIATES, P.C.
8911 Research Drive
Irvine, CA 92618
(949) 788-9961

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

on Feb 17, 2006

/David Bowls/
David Bowls, Reg. No. 39,915
Michael A. Shimokaji, Reg. No. 32,303